



PATENT

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APPLICANTS:

Temple et al.

SERIAL NO.: 08/536,345

FILED: September 29, 1995

FOR: MULTI-CHANNEL ARRAY
DROPLET DEPOSITION APPARATUS

GROUP ART UNIT: 2851

EXAMINER: C. Mahoney

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) **October 15, 2001**

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RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

This paper is in response to the official action mailed on August 13, 2001, setting forth a restriction requirement in the above-identified application.

The official action restricts the present application between claim Group I, including claims 20-45, 59-66, and 75-80, drawn to a multi-channel array droplet deposition apparatus and method of making, and claim Group II, including claims 67-74, drawn to a piezo-electric ink jet print head and method of making. Applicants provisionally elect, *with traverse*, the claims of Group I. However, applicants traverse the original restriction requirement and propose the following alternative restriction requirement.

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Applicants believe that restriction between a Proposed Group I, including claims 20-45 and 59-74 (directed to a multi-channel array droplet deposition apparatus and method of making), and a Proposed Group II, including claims 75-80 (directed to a multi-channel array droplet deposition apparatus) would be proper based on the following grounds.

With regard to Proposed Group I, independent claim 20 recites a method of manufacturing a multi-channel array droplet deposition apparatus that is similar to the method recited in independent claims 70 and 74. Each of these method claims recites providing or forming a body of piezo-electric material with a plurality of open-topped channels. The channels are recited as being separated by walls which have metal electrodes on opposite sides. Each of these method claims further recites covering the channels with a top cover or closure sheet with a pattern or array of parallel conductors or conductive tracks aligned with the open tops of the channels. Each of these method claims further recites that the conductive tracks are bonded in some form to the respective electrodes of the corresponding walls.

Variations in language aside, the differences between independent method claims 20, 70, and 74 and the related dependent claims do not render the claims patentably distinct. For example, claim 20 recites abutting a plurality of the modules together, though each module is provided as noted above. In addition, claims 70 and 74 recite soldering the top cover conductive tracks to the wall electrodes, whereas claim 20 more broadly recites bonding the tracks and electrodes. The differences in these claims are not patentably distinct.

Claims 34 and 59 each recite a multi-channel array droplet deposition apparatus that is similar to a piezo-electric ink jet print head recited in claims 67 and 72. Each of these apparatus claims recites a base piezo-electric material sheet or body with parallel open-topped channels. The channels are separated by upstanding walls formed in the base material. The walls are recited as forming opposed channel facing surfaces with electrodes provided on

these surfaces. Each claim also recites a channel-closure sheet or top cover over the channels. The top cover has an array or pattern of parallel conductive tracks spaced at intervals corresponding to the channel spacing and disposed opposite to the channels. Each claim also recites that the top cover or closure sheet is bonded in some form to the piezo-electric layer connecting each track with respective electrodes on the channel facing walls.

Variations in language aside, the differences between independent apparatus claims 34, 59, 67, and 72 and the related dependent claims do not render these claims patentably distinct. For example, claim 34 again recites a plurality of like modules butted together. Each of the modules is constructed as discussed above, and thus includes the essential elements common between claims 34, 59, 67, and 72. Claims 34 and 59 also recite a means for supplying droplet liquid to the parallel channels and claim 59 further recites that the means is a non-integral manifold. This non-essential feature does not render claims 34 and 59 patentably distinct from claims 67 and 72. Also, claims 67 and 72 recite that the parallel conductive tracks on the top cover or closure sheet are soldered to the electrodes of the channel walls, whereas claims 34 and 59 recite more broadly that the tracks and electrodes are bonded to one another. Again, these differences do not render claims 34, 59, 67, and 72 as patentably distinct from one another.

With regard to Proposed Group II, independent claim 75 recites a patentably distinct multi-channel array droplet deposition apparatus. Claim 75 recites a such an apparatus having both a transverse duct for supplying droplet fluid to the channels and a top cover or closure sheet that covers the open tops of the channels. The transverse duct, and not the closure sheet, has *a defining surface with an array of parallel conductive tracks* spaced at intervals corresponding to the channel spacing. Claim 75 also recites that each track of the *duct* is electrically connected to the electrodes. The defining surface of the duct is recited as

comprising a glass or a ceramic other than a piezo-electric material. In contrast to independent claim 75, the closure sheet in each of claims 20-45 and 59-74 carries the tracks. This results in a substantially different, patentably distinct construction. Independent claim 75 and dependent claims 76-80 are therefore patentably distinct from the remaining claims 20-45 and 59-74 pending in the application.


Therefore, the applicants propose that the requirement be modified to restrict between the Proposed Groups I and II. Further, *if the proposed restriction is agreed upon*, the applicants *would elect, without traverse*, allowed claims 75-80 of Proposed Group II, and would withdraw allowable claims 20-45 and 59-74 of Proposed Group I from further prosecution in this application. Such election, of course, would be without prejudice to pursuing the non-elected claims 20-45 and 59-74 in a timely filed divisional application.

CONCLUSION

Applicants therefore have provisionally elected to prosecute the claims of original Group I, as identified in the official action, *with traverse*. However, applicants have proposed an alternative restriction requirement and *would elect, without traverse*, Proposed Group II, including claims 75-80, if the proposed restriction is agreed upon.

The-examiner is invited to contact the undersigned at the telephone number listed below to discuss any further issues or matters of form that would place this application in condition for allowance.

Respectfully submitted,
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